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an optical element having at least one of a cylindrical surface and a toric surface, said optical element being rotatable about and tiltable to an optical axis of said optical system.

2. (Amended) An aberration changing optical system for changing an aberration, said optical system comprising:

an optical element having different refracting powers in two orthogonal directions or having a refracting power only in one direction, said optical element being rotatable about and tiltable to an optical axis of said optical system.

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3. (Amended) An aberration changing optical system according to Claim 1 or 2, further comprising a plurality of optical elements each being rotatable and tiltable, and wherein said optical elements are selectively used to change aberration.

4. (Amended) An aberration changing optical system according to Claim 1 or 2, further comprising a second optical element having at least one of a cylindrical surface and a toric surface, said optical element being rotatable about and tiltable to the optical axis of said optical system integrally with the first mentioned optical element, said second optical element further being tiltable in an opposite direction to the first-mentioned optical element.

5. (Amended) An aberration changing optical system according to Claim 1 or 2, further comprising a parallel flat plate being rotatable about and tiltable to said optical axis of

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said optical system integrally with the optical element, said parallel flat plate further being tiltable in an opposite direction to said optical element.

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6. An aberration changing optical system according to any one of Claims 1 - 2, wherein said optical element is mainly composed of a transparent material of one of quartz and fluorite.

7. An aberration changing optical system according to any one of Claims 1 - 2, wherein the or each surface of said optical element, having a refracting power, has a refractive power not greater than  $3 \times 10^{-7} \text{ mm}^{-1}$ .

8. A projection system, comprising:  
a projection optical system; and  
an aberration changing optical system as recited in any one of Claims 1 - 2, for correcting an aberration to be produced in said projection optical system.

9. A projection exposure apparatus, comprising:  
an illumination system; and  
a projection system for projecting a pattern of a mask onto a substrate in cooperation with said illumination system, said projection system including a projection optical system and an aberration changing optical system, as recited in any one of Claims 1 - 2, for correcting an aberration to be produced in said projection optical system.

10. A device manufacturing method, including a process for transferring a device pattern onto a wafer by use of a projection exposure apparatus as recited in Claim 9.

18 11. (Amended) An optical system for a projection exposure apparatus, said optical system comprising:

an optical element having at least one of a cylindrical surface and a toric surface, said optical element being inclined with respect to an optical axis.

12. (Amended) An optical system for a projection exposure apparatus, said optical system comprising:

an optical element having different refracting powers in two orthogonal directions or having a refracting power only in one direction, said optical element being inclined with respect to an optical axis.

13. (Amended) An optical system according to Claim 11 or 12, further comprising a plurality of optical elements each being rotatable and tiltable, and wherein said optical elements are selectively used to change aberration.

14. (Amended) An optical system according to Claim 11 or 12, further comprising a second optical element having at least one of a cylindrical surface and a toric surface, said second optical element being inclined with respect to the optical axis and in an opposite direction to the first-mentioned optical element.

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15. (Amended) An optical system according to Claim 11 or 12, further comprising a parallel flat plate being inclined with respect to the optical axis and in an opposite direction to said optical element.

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16. An optical system according to any one of Claims 11 - 12, wherein said optical element is mainly composed of a transparent material of one of quartz and fluorite.

17. An optical system according to any one of Claims 11 - 12, wherein the or each surface of said optical element, having a refracting power, has a refractive power not greater than  $3 \times 10^{-7} \text{ mm}^{-1}$ .

18. A projection system, comprising:  
a projection optical system; and  
an optical system as recited in any one of Claims 11 - 12, for correcting an aberration to be produced in said projection optical system.

19. A projection exposure apparatus, comprising:  
an illumination system; and  
a projection system for projecting a pattern of a mask onto a substrate in cooperation with said illumination system, said projection system including a projection optical system and an optical system, as recited in any one of Claims 11 - 12, for correcting an aberration to be produced in said projection optical system.